



**Ontario College of Teachers
Ordre des enseignantes et des enseignants de l'Ontario**

Additional Qualification Course Guideline Honour Specialist Science

**Schedule E
Regulation 184/97
Teachers' Qualifications**

April 2003

Ce document est disponible en français sous le titre de *Ligne directrice du cours menant à la qualification de spécialiste en études supérieures en sciences.*



Additional Qualification Course Guideline Honour Specialist Science

1. Introduction

The Ontario College of Teachers is the self-regulatory body for the teaching profession in Ontario. Its mandate is to “provide for the ongoing education of members of the College” (*Ontario College of Teachers Act*, Part II Subsection 3 (1) paragraph 6).

In-service professional learning, within the mandate of the College, is identified in Regulation 184/97, Teachers’ Qualifications. This regulation includes courses and programs such as Additional Basic Qualification courses, Additional Qualification courses including Honour Specialist courses, the Principal’s Qualification Program and the Supervisory Officer’s Qualification Program. Accredited courses support the *Standards of Practice for the Teaching Profession* and the *Ethical Standards for the Teaching Profession* and meet the legislative requirements included in Regulation 184/97.

Successful completion of the Additional Qualification course Honour Specialist Science listed in Regulation 184/97 made under the *Ontario College of Teachers Act* is recorded on the Certificate of Qualification issued to members of the College.

The underlying purpose of the Additional Qualification course Honour Specialist Science is to focus on developing the capacity for curriculum leadership in candidates. The Additional Qualification course Honour Specialist Science supports the expectations outlined in the Ministry of Education curriculum policy documents and other Ministry of Education policies.

In this document, all references to candidates are to teachers enrolled in the Additional Qualification course. References to students indicate those in school programs.

2. Background

Teachers who enrol in the Additional Qualification course Honour Specialist Science possess expertise in the subject area and have at least two years of successful teaching experience including one year in Ontario in the subject(s) in which the Honour Specialist is sought, as per regulatory requirements, [Regulation 184/97, Section 40 (1)]. Candidates include teachers who plan to move into leadership positions at the elementary, secondary and district levels as well as teachers interested in engaging in subject-specific ongoing professional learning. The College recognizes that candidates working in any of the four publicly funded systems have a need to explore topics and issues of particular relevance to the system in which they work or may work.

The Additional Qualification course Honour Specialist Science focuses on curriculum leadership. The course addresses contexts and theories underpinning the study of Science. Pedagogy, curriculum, assessment and evaluation, technology, child and adolescent development related to program planning and implementation are also addressed.

3. Standards of Practice for the Teaching Profession and the Ethical Standards for the Teaching Profession

A commitment to a clear vision of what it means to be a teacher is at the core of teacher professionalism. The *Standards of Practice for the Teaching Profession* and the *Ethical Standards for the Teaching Profession* provide the focus for ongoing professional learning and are the foundation for the development of the Additional Qualification course Honour Specialist Science. In addition, the *Professional Learning Framework for the Teaching Profession* supports the *Standards of Practice for the Teaching Profession*, articulates the principles on which effective teacher learning is based and acknowledges a range of options to promote continuous professional learning.

4. Learning Expectations

The *Standards of Practice for the Teaching Profession* and the *Ethical Standards for the Teaching Profession* have been embedded in the learning expectations for the Additional Qualification course Honour Specialist Science.

This Additional Qualification course has the following learning expectations for candidates:

- demonstrating leadership in the implementation of Ministry of Education elementary and secondary school and curriculum policies
- demonstrating leadership in communicating changes in and implications of provincial legislation and local policies including legal and ethical issues related to teaching Science and Science and Technology in the elementary grades
- demonstrating knowledge of child and adolescent development related to the teaching of Science and Science and Technology in the elementary grades
- facilitating the creation of learning environments conducive to the intellectual, social, emotional, physical, linguistic, cultural, spiritual and moral development of students
- demonstrating leadership in anticipating, implementing and evaluating safety procedures and policies in the classroom and beyond
- demonstrating knowledge of theoretical foundations and methodologies necessary to plan, implement and assess Science and Science and Technology programs for students

- promoting an awareness of current research in Science and an understanding of its implications for teaching and learning
- demonstrating and analysing strategies to create an inclusive, equitable and safe learning environment that addresses the diversity of learners, both children and adults
- demonstrating leadership in accommodating and/or modifying expectations, teaching strategies and assessment practices to address the developmental and/or special needs of students
- modelling and implementing assessment and evaluation practices based on data analysis and research to improve student achievement and learning
- demonstrating leadership in accessing and assessing a variety of resources, including technology, within and beyond the educational system to enhance and support student learning
- demonstrating the ability to integrate information and communication technology into teaching practice
- demonstrating the organizational and interpersonal skills necessary as a curriculum leader in Science and Science and Technology in the elementary grades
- understanding ways to facilitate reflective practice as a means to improve teaching and learning
- demonstrating the knowledge and skills to facilitate innovation and change to improve learning
- understanding the issues and challenges related to the teaching of Science and Science and Technology in the elementary grades
- understanding how to create and sustain professional learning communities at the school, district and/or provincial level
- understanding how to develop communication networks that promote collaboration with in-school personnel, parents/guardians and the community.

5. Curriculum Content

The Additional Qualification course Honour Specialist Science supports the following Ministry of Education documents:

Choices into Action

Ontario Secondary Schools, Grades 9-12

Program Planning and Assessment, Grades 9-12

The Ontario Curriculum, Grades 9 and 10: Science

The Ontario Curriculum, Grades 11 and 12: Science

The Ontario Curriculum, Grades 11 and 12: Interdisciplinary Studies

The Ontario Curriculum, Grades 1-8: Science and Technology

Individual Education Plans: Standards for Development, Program Planning and Implementation

At least one half of the course content needs to have a subject specific focus.

Successful candidates will demonstrate their understanding and ability to apply the following:

- A. *The Standards of Practice for the Teaching Profession and the Ethical Standards for the Teaching Profession*
- B. Theoretical Foundations
 - understanding the context (historical, philosophical, sociological, psychological) related to the study of Science and Science and Technology in the elementary grades
 - understanding and applying human development theories and research (social, emotional, physical, intellectual, linguistic, cultural, spiritual and moral) about the learner and the study of Science and Science and Technology in the elementary grades
 - understanding theories of exceptionalities related to the learner
 - demonstrating an awareness of local, provincial and international developments in the teaching of Science and Science and Technology in the elementary grades
 - reflecting on personal teaching practice and engaging in professional dialogue on the relationship of theory and practice in the teaching of Science and Science and Technology in the elementary grades
- C. Program Planning, Development, Implementation and Review
 - analyzing Ministry of Education elementary and secondary curriculum policies and identifying implications for program planning and implementation
 - designing review processes for continuous program improvement and currency
 - exploring teaching and learning strategies related to the learning styles of students
 - assisting colleagues to modify learning expectations and teaching practices and to make accommodations for the learner based on developmental and/or special needs
 - exploring opportunities for cross-curricular literacy and interdisciplinary studies in Science education

- examining the use of appropriate technology to implement the Science and Science and Technology curricula and to facilitate student learning
- promoting the safe, ethical and legal use of technology and other resources in Science and Science and Technology programs

D. Student Assessment and Evaluation

- modelling the development and use of an array of assessment and evaluation strategies suitable for teaching Science and Science and Technology in the elementary grades
- generating strategies to facilitate student learning and enhance student achievement based on research, data analysis and Ministry of Education policies
- assisting others to develop performance criteria that measure students' achievement of curriculum expectations
- assisting others in developing methods that provide continuous, meaningful, detailed and supportive feedback to students
- demonstrating leadership in modifying assessment practices based on the developmental and/or special needs of students

E. Leadership and Ongoing Professional Learning

- promoting safety policies and procedures in the classroom and beyond
- promoting the benefits of participating in local, provincial, national and international organizations related to the teaching of Science and Science and Technology in the elementary grades
- assisting others to access organizational, print and electronic resources which support curriculum, professional growth and leadership
- promoting the use of information and communication technologies as teaching and learning tools where appropriate
- modelling strategies to initiate and manage change related to Science education
- modelling team building and decision-making skills necessary as a curriculum leader in Science and Science and Technology in the elementary grades
- promoting effective teaching strategies and assisting new teachers and others to improve and refine classroom practice in the delivery of Science and Science and Technology programs
- encouraging and supporting colleagues' interests in professional growth opportunities related to the teaching of Science and Science and Technology in the elementary grades

- planning and organizing subject-specific professional development for others
- demonstrating skills and strategies that facilitate the establishment of networks with school and board personnel, subject associations, parents/guardians and the community to support Science education
- demonstrating leadership in the application of provincial regulations and policies, and local policies and procedures
- informing others about policies, guidelines, and legal and ethical issues related to the teaching of Science and Science and Technology in the elementary grades
- demonstrating knowledge and skills required to manage an area of responsibility including staffing, budgets and the selection of texts, software and media.

6. Instructional Practice

In the delivery of this Additional Qualification course, instructional practices are relevant, meaningful, practical and supported by academic literature. These include, but are not limited to, small group interaction, action research, peer presentations, independent inquiry, problem solving, co-operative learning and direct instruction. Instructors honour the principles of adult learning, recognize candidates' experience and prior learning and respond to individual needs. Important to the course are opportunities for candidates to create support networks, receive feedback from peers and instructors and share their learning with others. Opportunities for professional reading, reflection, collaboration and discussion are also integral parts of the course.

Instructors model effective instructional practices and employ a variety of strategies for formative assessment and summative evaluation. Instructors are encouraged to use information and communication technology to support pedagogical effectiveness.

7. Assessment and Evaluation of Candidates

At the beginning of the course, candidates are provided with the specific expectations and forms of assessment and evaluation that will be used throughout the course. A balanced approach to candidate assessment and evaluation is used. It includes a combination of self, peer and instructor formative assessment, instructor evaluation, and models best practice.

The following list of assessment and evaluation strategies is not exhaustive; it is intended to serve as a guide only.

- a) Performance assessment: designing a unit that is based on Ministry of Education curriculum expectations, includes assessment and evaluation tools, and incorporates a variety of technologies and resources
- b) Written assessment: reflecting critically on issues arising from articles, publications, research and/or other resources related to the teaching of Science and/or Science and Technology
- c) Written test: responding to questions or writing an essay on an aspect of leadership in Science education
- d) Oral presentation: presenting a topic related to Science and/or Science and Technology that could be replicated for a presentation to parents and/or school community
- e) Portfolio: creating a portfolio of practical resources and recording critical reflections on the delivery of the Science and Science and Technology curricula
- f) Action research: engaging in reflective practice through personal research and its application within the context of Science education
- g) Leadership project: developing a comprehensive plan for a curriculum-related project at the school or board level.